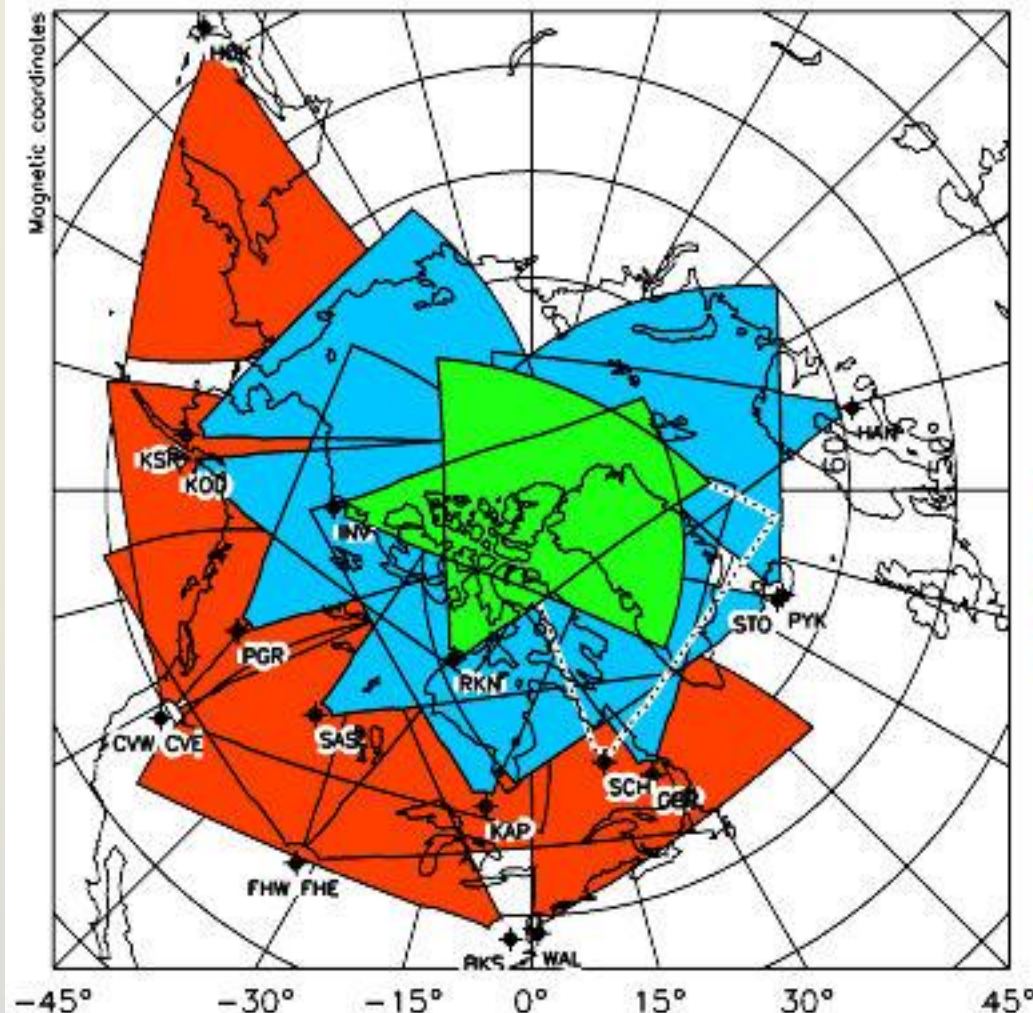*space@VT*

SuperDARN

Ionospheric Variability and Modeling with Arrays of HF Radars (SuperDARN)

Lead: Dr. J. Michael Ruohoniemi
Team Members: Dr. Jo B. Baker, Kevin Sterne, Sebastien de Larquier, A J Riberio, and Evan Thomas

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SuperDARN – Northern Hemisphere

HF radars: 8- 20 MHz

24/7 operation

Study: Ionospheric propagation and backscatter

Legend:
- **Polar Cap** (green)
- **High-Latitude** (blue)
- **Mid-Latitude** (red)
- **Out-of-Service** (dotted)

SuperDARN: Research Areas

- The Super Dual Auroral Radar Network (SuperDARN) is supported by the NSF to perform research on the ionosphere, magnetosphere, and upper atmosphere

- Utilizes frequency agile HF radars arrayed for comprehensive coverage of 'space weather' in the ionosphere. Specific areas of interest:

- HF propagation in the ionosphere, ionospheric structure and variability, ionospheric modeling

- Geomagnetic storm effects on the ionosphere and HF radar performance

- Ionospheric irregularities, plasma instability, TIDs

Unique Qualifications and Capabilities

- Lead-PI institution for the U.S. component of the SuperDARN collaboration

- Fully integrated research team at Virginia Tech that encompasses scientific, engineering, and analytical skills

- Access to SuperDARN HF radar data and the ability to model ionospheric propagation and simultaneously map disturbance effects ('big-picture')

- Cutting–edge expertise in applying GPS/TEC data to model ionospheric structure and relate to HF effects

- The ability to provide data and skills to aid in the testing and development of ionospheric models with an emphasis on HF

Specific Capabilities & Research Sought

- Hardware: Purchase and implementation of specialized equipment for increased echo-location capabilities with the radars

- Software: Development of software tools for routinely solving ionospheric structure on the basis of the HF radar observations

- Research: Join a group that requires extensive data to test and develop ionospheric models for HF propagation

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